Training Course III

Title: Introduction to Environmental Epidemiology

Instructors:
John Dunbar, Dr. P.H.; David Hoel, Ph.D.; Daniel Lackland, Dr. P.H.; Lawrence Mohr, M.D.;
Medical University of South Carolina

Time: Monday 14 May 2001, 1:00-5:00 p.m.

Course objectives:
Provide an introduction to the use of epidemiology in identifying potential hazardous exposures, and the process by which exposures may be associated/linked with adverse health effects.

Target audience:
This introductory course could aptly be called "epidemiology for the non-epidemiologist." The audience is expected to be those who have an interest in health effects and their identification, but who do not have a background in the health sciences.

Course description:
This short course will provide a basic review of the use of epidemiology in the study of environmental health. It will begin with a definition and brief history of epidemiology. The postulates for determining cause and effect, and the different types of studies used to evaluate environmental exposure and risk will then be described. This will lead into an overview of the fundamentals of environmental risk assessment, and the use of biomarkers in risk assessment. The course will conclude with summaries of the interpretations and significance of several epidemiological case studies. The case reports will include epidemiological studies and the interpretation of the results with a focus on what can and cannot be concluded from the study, based on the limitations of the methodology and the type of study undertaken. The descriptive study presentation will include the use of Geographic Information Systems (GIS) in the evaluation of disease and exposure in the population. Participation and discussion is encouraged.

Course outline:

I. Epidemiological Approaches		
A. Introduction to Epidemiology	*John Dunbar*	*10 minutes*
1. Historical perspective		
2. Definitions		
B. Postulates of Cause and Effect	*Daniel Lackland*	*10 minutes*
C. Types of Epidemiological Studies	*Daniel Lackland*	*10 minutes*
D. Fundamentals of Risk Assessment	*David Hoel*	*30 minutes*
E. Use of Biomarkers in Epidemiology	*Lawrence Mohr*	*30 minutes*
II. Use of GIS for Epidemiological Studies		
A. Descriptive Studies	*Daniel Lackland*	*30 minutes*
1. Cancer incidence/patterns		
III. Case Reports of Epidemiological Studies		
A. Cohort Sudies	*David Hoel*	*30 minutes*
1. Radiation epidemiology		
B. Case Control Studies	*Lawrence Mohr*	*30 minutes*
1. Biomarkers		

Biographical sketches of instructors:

John Dunbar is a dentist and a Doctor of Public Health. He worked for a dozen years at NIH (Heart, Lung, and Blood) as a science administrator and program officer for research activities in high blood pressure. At present he is Adjunct Professor of Epidemiology at the Medical University of South Carolina, where in 1990 he established a cancer registry in the SRS region. He retired in 1999 but remains active with the Environmental Biosciences Program of MUSC.

David Hoel holds a Doctor of Philosophy degree in statistics and biostatistics, and is Distinguished University Professor in the Department of Biometry and Epidemiology of the Medical University of South Carolina. His research on the health effects of low dose radiation is known world-wide. At present he also directs the DOE-funded program for evaluating the health of former SRS workers (former employees of both Dupont and Westinghouse).

Daniel Lackland holds a Doctorate in Public Health and works as an epidemiologist with several colleagues at the Medical University of South Carolina on clinical outcomes research in diabetes, hypertension, and cancer. Also, he and a colleague in England with the Medical Research Council are setting up studies of the adult consequences of low birth weight, such as diabetes and hypertension.

Lawrence Mohr is Professor of Medicine at the Medical University of South Carolina, having earned a Doctor of Medicine degree in Internal Medicine. He has distinguished himself both in medical teaching, and research, especially in clinical epidemiology. Recently he retired as White House Physician. Not surprisingly he is sought widely as a speaker and colleague. At present he directs the Environmental Biosciences Program at MUSC.